

POWER POLITICS: THE IMPLICATIONS FOR NUCLEAR POLICY AND ELECTRICITY IN SCOTLAND 1973-89⁽¹⁾

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In the years after 1973 the energy situation in the major industrialised countries of Western Europe was transformed. The massive rise in oil prices inevitably led to policies which drastically reduced the use of oil, both in power stations and industry, and the shift to nuclear power for electricity generation was a trend that could be described as ineluctable. At the same time, for a combination of reasons, the imports of coal into the EEC by multinational energy companies sharply increased. It followed that the demand for indigenous steam and coking coal was steadily, and quite sharply reduced, and by the early eighties the mining industries of the Community faced one crisis after another. At the end of the decade deep-mined coal was virtually extinct in Belgium, in certain important regions in France, and over much of the UK including Scotland. The timetable for completion of the 1992 EEC internal market saw further directions to this coal rundown. Energy is a crucial part of the overall economic policy the EEC will impose on member states in the nineties, and EEC policies are pro-nuclear and coal imports from multinational energy companies (MECs), and anti-EEC mined coal. But the eighties has also seen the first serious questioning in Europe of the economics of nuclear power. There has been a halt to most nuclear power stations (p/s) in the EEC apart from the UK and France. By 1988 all nuclear plant in Italy had been closed, and several countries announced that no further nuclear power stations would be built.

This is the background to the UK discussions of the real costs of nuclear power. The public enquiries into Sizewell B and Hinckley C and the debates over the planned privatisation of electricity has forced into the open more realistic estimates of nuclear p/s costs, and a drastic revision of comparative total costs which show they are far more expensive than coal p/s, with costs which will continue long after closure. Under pressure from the City of London, who have a major say as to which parts of the industry are marketable, the nine Magnox reactors were withdrawn from the sale, and guarantees given for the remaining nuclear plant. This contradicts all previous cost claims by the Central Electricity Generating Board (CEGB) and the Department of Energy (DEn) and must imply a revision of how we look at the history and economics of electricity, not only in the UK but in every EEC country with nuclear power. Apart from France this process is well under way.

The Scottish situation is a footnote to these developments. But it does show us what can happen when public policy is decided by institutions which are not publicly accountable, and where the political opposition, such as it was, lacked the costings of a p/s programme. Before we turn to this we look briefly at the main electricity industries of the EEC after 1973; the Government policies of the coal producers, which bring out the main tenets of public policy; the weakness of the coal industries as a political force; and the new role of the EEC Commission.

Trends in EEC Electricity Production and Fuel Imports, 1973-1988

Though electricity production by p/s in the EEC grew by 46.9% from 1973 to 1988, with a stagnation in the worst of the recession from 1979 to 1982, the trend of output over the whole period varied considerably between member states⁽²⁾. In France output rose from 171,290 GWhours (GWh) in 1973 to 333,864 GWh in 1988, a rise of 94.9%. In fact all EEC countries apart from the UK registered sharp growth, with an EEC total increase of 46.9%. Despite the rise most forecasts from Governments and utilities, including the UK had overestimated the need for expansion. In England the industry exaggerated future electricity demand from the sixties until the recession of 1979-82 by as much as 25% per year. Thus the forecast made in 1974 for Central Electricity Generating Board (CEGB) maximum system demand in 1980 was 56 GW (thousand MW), yet the actual outturn was only 43 GW. UK electricity output went from 262,060 GWh in 1973 to 278,736 GWh in 1979 and then fell in the recession to 253,228 GWh in 1982. There was little growth in CEGB area sales before 1984, though demand rose nearly 10% thereafter by 1987/88.⁽³⁾ The overestimation had implications for the utilities in terms of finance and construction, and as we shall see for the long-run costs of nuclear plant, whose financial characteristics are quite different from coal p/s.⁽⁴⁾ In France the over-ordering of nuclear p/s left Electricite de France (EdeF) with a total debt of £35 billion by 1989 and a major crisis in the nuclear plant industry, though increases in electricity exports and sales at home have eased the burden. The worst case of excess in the EEC has been the South of Scotland Electricity Board (SSEB) where continued building has taken place since the sixties for which there was no possible justification. Units sold to customers increased from 17,160 GWh in 1973 to peak at only 18,524 GWh in 1979 followed by a fall in the recession. Demand in the SSEB area only rose above the 1979 level in 1986 and all that could have been met by p/s finished prior to Inverkip and Hunterston B.

Second, EEC coal, the main indigenous fuel for p/s, faced stiff competition from MECs and national suppliers from South Africa, Columbia, Australia, Poland and the USA. Together they pushed up coal imports into the EEC from 41 million tonnes (mt) in 1975 to 81 mt in 1988. In Germany steam coal imports have not made much impact on the p/s sector, but in France, as Table 1 shows, imports rose fast from 1973 to 1980

Table 1: EEC 9 Hard Coal Output (including opencast) and imports, 1973-1988

Year	EEC 9 Output	EEC 9 Imports	Ger (O)	Ger (I)	Fr (O)	Fr (I)	Bel (O)	Bel (I)	UK (O)	UK (I)	Holl (I)	Italy (I)
1975	256,892	41,131	99,161	5,780	22,414	10,921	7,478	2,404	127,789	4,592	2,848	9,560
1976	247,680	43,789	96,325	5,410	21,851	13,755	7,238	3,548	122,211	2,434	3,666	10,032
1977	240,401	45,980	91,310	5,364	21,294	15,548	7,068	3,157	120,674	2,137	3,836	10,284
1978	238,128	43,335	90,103	5,703	19,690	15,870	6,590	2,716	121,695	2,019	3,351	9,849
1979	238,748	59,344	93,310	6,886	18,611	19,547	6,125	5,900	120,637	4,047	3,844	11,180
1980	247,225	73,915	94,492	7,265	18,136	22,632	6,324	7,337	128,208	7,175	5,022	14,299
1981	245,640	70,190	95,545	8,073	18,589	20,128	6,136	7,245	125,301	4,133	5,383	16,230
1982	241,241	71,644	96,318	8,808	16,895	16,964	6,539	8,544	121,427	3,566	7,803	17,430
1983	229,263	59,338	89,620	7,941	17,022	12,884	6,098	5,036	116,448	3,701	6,422	15,242
1984	157,379	79,279	84,868	8,253	16,594	16,697	6,298	6,720	49,549	7,146	9,890	18,441
1985	201,035	86,564	88,849	9,052	15,124	15,186	6,212	6,846	90,793	11,371	10,989	20,288
1986	211,697	83,186	87,126	9,335	14,398	13,877	5,590	6,792	104,511	9,759	11,550	18,811
1987	202,161	78,920	82,382	7,640	13,743	11,062	4,346	7,509	101,645	8,620	12,437	18,198
1988	195,392	81,207	79,318	6,801	12,143	10,189	2,487	9,354	101,392	11,368	13,481	16,494

Source: Eurostat, Coal Monthly, Electricity Monthly.

Table 2: Electrical Energy, Fuel Consumption in 10³ TJ (1000 Terajoules) EEC 10, Germany, France and the UK

EEC 10	1973	1975	1977	1978	1979	1980	1982	1983	1984	1985	1986	1987
Total p/s	8773	8200	8656	9102	9588	9400	8566	8375	8218	8048	8023	8228
conventional												
of which												
Coal	4239	3979	4652	4845	5239	5448	5523	5626	4945	5309	5456	5547
Crude oil	3173	2555	2437	2735	2192	2590	1949	1580	1945	1522	1365	1414
Gas	984	1318	1258	1209	1215	1039	836	921	1018	927	909	981
for												
electricity	8615	8045	8488	8922	9403	9212	8388	8195	7998	7843	7829	8008
for heat	157	155	169	179	186	188	177	180	189	205	194	230
Total nuclear	713	999	1310	1419	1557	1787	2674	3184	4029	4867	5123	5255
nuclear %	7.5	10.9	13.1	13.5	14.0	16.0	23.8	28.3	33.0	37.7	39.0	39.0
Total Nuclear in												
Germany	128	226	383	382	449	463	692	689	960	1312	1213	1335
France	190	229	230	358	459	684	1201	1566	2063	2398	2704	2815
UK	343	388	489	449	462	436	504	567	594	669	648	627
Total Coal in												
Germany	1855	1650	1857	1931	2036	2090	2181	2285	2288	2161	2149	2068
France	292	306	479	545	603	596	584	541	457	390	308	269
UK	1823	1744	1868	1893	2064	2099	1903	1934	1271	1765	1962	2058
Total Crude in												
Germany	416	292	286	297	271	242	168	130	104	111	135	139
France	652	496	443	502	495	447	247	146	76	65	41	55
UK	784	601	509	544	518	343	314	256	917	485	308	258

Source: Eurostat, Electrical Energy Principal Aggregates.

in line with increases in coal fired p/s demand and remained high when that demand fell, which hit the local industry very hard in the eighties. In the UK there has also been an impact on home production, with imports rising from 2 mt in 1979 to 12.2 mt in 1988.

Third, the massive price advantage given to coal by the oil rises of 1973 and 1979 has not led to as much substitution as might be expected and in parts of the EEC, notably in Italy, oil use has actually increased. Consumption of oil in the EEC p/s fell from 76.4 mt to 32.4 mt in 1986, and in industry from 76.0 mt to 23.4 mt, with the fastest falls in Germany and France. Though oil companies have reduced the proportion of p/s fuel they make, the process of refining results in huge quantities which have to be burnt somewhere and periodic fluctuation in crude oil prices have also encouraged oil use. In the industrial market the capital costs of replacing oil by coal-fired plant (which has cheaper operating costs) proved less attractive in the eighties, even where Government aid has been available.

Total coal-fired electricity output rose by 28.5% between 1973 to 1980 (Table 2), helped by the rise in output from conventional stations and the fall in the use of oil, though gas provided some increase in competition, especially in Holland and Italy. But in the eighties EEC coal has also been worsened by the expansion of nuclear electricity generation whose part in total p/s output rose from 7.5% in 1973 to 39.0% by 1986. Because of this coal use stagnated in the eighties. The nuclear threat was more serious because utilities run merit orders for power stations with nuclear in operation all available time (Table 3).

Table 3: Use of Nuclear Power in Electricity Merit Order

Country	Nuclear Capacity as % of Total		Nuclear Generation as % of Total	
	1987	1988	1987	1988
Belgium	39.0	39.0	66.3	66.1
France	50.5	52.0	69.7	69.9
Germany	19.8	22.1	31.5	34.2
Italy	2.3	1.9	0.1	0.0
Netherlands	2.9	2.9	5.0	5.1
UK	13.3	14.6	16.4	18.8

Source: Nuclear Engineering International, 1989.
Nuclear Energy Data OECD, Nuclear Energy Agency, 1989.

Improved energy efficiency in EEC economies has had some impact on electricity demand. For the performance of energy use in the EEC economies, the ratio of final energy consumption to gross domestic product (GDP), the EEC average improved by around 20% from 1973 to 1982, and another 2.5% from 1982 to 1986.⁽⁵⁾ This partly reflects the rise in the service

component of GDP, which consumes around one-eighth of the energy for a similar value of output in industry. Pressures also came from the public sector and companies conscious of the contribution a reduction in energy use would make to overall costs, as well as criticism from the Greens of industrial and household waste in the EEC. The UK managed an 18% improvement in the energy/GDP ratio from 1973 to 1982, but one-third of this was achieved by the collapse of several high energy use industries, and there was considerable leeway to make up with best household and industrial practice in the rest of the EEC. A small reduction in coal use may be attributed to improved p/s efficiency.⁽⁶⁾

The cutbacks in steel production orchestrated by the EEC and improvements in steel technology affected the need for coke, the second largest EEC coal market, and demand fell from 87.5 mt in 1980 to 67.6 mt in 1987. The sharpest fall was in the UK, where coking coal use fell from 19.6 mt in 1976 to 11.3 mt in 1980 and to 10.9 in 1986.⁽⁷⁾ The overall figures for EEC coal show that down to 1973 mine closures had cut output to 270 mt. The oil crisis implied that many mines which had been closed would have been profitable, but lack of investment prior to 1973 meant remaining mines required huge investment, or faced declining output, so closures continued. From 1979 to 1982 output stabilised at 242 mt a year. Further closures cut output to 195.4 mt in 1988.⁽⁸⁾

Dominance of Energy Policy by the Nuclear Industry

The decisions taken to expand nuclear power and coal imports have largely depended on the balance of power within the EEC energy establishments and the view taken by national Governments of the place of energy in their overall political economy. In two countries, the UK and France, the nuclear bias of the energy establishment was well established in energy decision-making by the 1960s. The manufacture of plutonium for the atom bomb meant a close relationship between the civil industry – EdeF, CEGB and SSEB – and the defence industry, though there were limits to the number of plants required for manufacture of bomb materials. The growth of civil nuclear plant, a spin-off from the bomb programme, was justified on the grounds that it would be cheaper than coal and repeated technical problems written off as part of a “learning curve”.

In France in the seventies the expansion of electricity meant coal for p/s more than doubled to 25.7 mt in 1979, and French output fell only slowly from 22.4 mt to 18.6 mt in 1980. But coal imports rose from 8.8 mt in 1974 to 22.6 mt in 1980, and this undercut the arguments for more investment in the domestic industry. French nuclear power rose only slowly to reach 37,898 GWh by 1979, or 16% of electricity output, but its rise thereafter was dramatic, reaching 260,178 GWh in 1988, or 78%. Coal deliveries to p/s fell to below 6 mt in 1988, and local output collapsed to under 12 mt, mostly for industry and household use.

By 1987 indigenous coal was largely irrelevant, and the industry ministry condemned it to an irreversible decline⁽⁹⁾, despite some long and violent clashes over closures. Cost comparisons by EdeF of nuclear with coal have concentrated on the operating costs, which shows that nuclear plants are cheaper than coal for base load electricity. As we shall see below, a more realistic appraisal of full costs, including those for decommissioning, has serious implications for this type of comparison. In Belgium total output fell from only 7.5 mt in 1975 to 6.2 mt in 1985. However, the rise in South African and other imports to Antwerp from an average of 3.5 mt in the seventies to double that in the eighties, undermined the cost arguments for Belgian coal. Coal deliveries to p/s peaked at 6.4 mt in 1982, but the rise in nuclear output then halved deliveries. In 1988 69.6% of electricity generated in Belgium came from nuclear plant, and more came in from France. The last pit was closed in 1989.

The basic public policy attitudes to French and Belgian mine closures were, first, the view which Government and electricity industry took, sooner in France than Belgium, that coal presented political problems and should be run down; second, that nuclear power was cheaper than coal or oil, or could be made to appear so; and third, that the MEC and other coal imports were cheaper than indigenous coal and that they could supply part of the fuel required for electricity and thus avoid investment in indigenous coal mines. The nuclear plant then took over in the eighties. These arguments determined policy, and set the parameters of what sort of economic analysis was acceptable. Thus though the Belgian ministry produced twelve volumes on the importance of Belgian coal to the rest of the economy in 1985 and 1986, it was ignored. So were the arguments produced by the CdeF, CFDT, and the CGT. Finally, nuclear power had a dramatic effect on coal deliveries to French and Belgian p/s, which in 1984 were 26.6 mt, but by 1988 had fallen to 9.7 mt, which therefore reduced the volume of imports required, and simplified the market.

In the UK the expansion of nuclear power has been more hesitant than in France, even in the eighties, and policy-makers had to confront the need for more investment in coal, which as discussed in the *Scottish Government Yearbook 1989*, was focussed in a few areas of England.⁽¹⁰⁾ Thus after 1979 when Government policy concentrated on the elimination of coal as a political problem, nuclear power and MEC imports could only act as a partial substitute. Only a fraction of the 86 mt delivered to the CEGB p/s per year 1978-1983 was obtainable on the international market and most of that was priced above NCB coal. In any case British port facilities were inadequate and unreliable.

The CEGB and SSEB have been central to post-1979 British Government policy and this had numerous financial and accounting implications for the nationalised industries. This was made easier for the Government by the willing involvement of the NCB in the contraction of its

activities and the redrawing of the accounts to reduce NCB incomes in real terms, and to show mounting losses, which were then cited as an example of an overmanned, badly organised nationalised industry in Government propaganda during the 1984/85 miners' strike.⁽¹¹⁾ We may point to two lines of policy which had an especial impact. (1) From 1979 the Government ordered reductions in the price of NCB coal for p/s use in real terms. This reduction in income cost the Board at least £500 million per year by 1984. (2) They imposed a two part pricing system in 1982 for the CEEB, and a version for the SSEB, whereby the smaller tranche was aligned with spot prices at Amsterdam, Rotterdam and Antwerp (ARA). In subsequent negotiations with the NCB/BC this smaller tranche was increased in size, and subdivided. The 1984-85 dispute confirmed that the spot market – a relatively new trade – was too small to handle significant tonnages before rapid price increases intervened, and that UK infrastructure was weak. In essence, therefore, the Government used its political power over the NCB to impose a price system which was not justified by the conditions of the time. The CEEB argument in 1981 and 1982 that the spot price could be read as the average market price for long-run supplies was not supported by the figures from the Customs and Excise, or by European import prices reported to the EEC statistics office. In subsequent negotiations, and before the House of Commons Energy Committee in 1985, the CEEB went further and used the drop in prices after the miners' strike to argue that 30 mt of imports were a viable option by 1992. Yet in their evidence to the Sizewell 'B' inquiry in 1982, the CEEB offered an entirely contradictory position. They argued that prices were dependent on long-run supply curves and all relevant costs including transport, and prices would thus rise well above current levels. Their three scenarios for the year 2000 in 1982 prices ranged from \$88 per tonne, to \$105, and \$141. Thus when arguing for increased nuclear power they pointed to the real conditions of supply and when berating the NCB/BC they argued that the spot price of a depressed commodity was a realistic surrogate for the market.

The Role of the EEC against indigenous coal, and in favour of Nuclear Power.

The EEC has advocated reductions in levels of deep mine EEC coal since the late fifties.⁽¹²⁾ The pressure since then has been persistent, with few interruptions, notably in the aftermath of the 1974 and 1979 oil price rises. In their papers and research it is axiomatic that nuclear power is cheaper and cleaner than coal.

The adoption of the internal market principle in the 1992 legislation has given the EEC Directorate-General for Energy, DG 17, who cover nuclear power, coal, oil and gas, a pivotal role in the eighties which it lacked before. It is now realised that EEC electricity and fuel supplies policies will be crucial for the context of the national industries. As discussed below, it is especially critical to the survival of EEC coal, which is the *main* impediment

impediment to more nuclear power, and comparison of costs are central to the argument.

The common thread of EEC proponents of coal closures has been the price of imported versus indigenous coal, and the price of nuclear electricity compared with coal fired. This has been a terrain that the coal industries largely lost and we need to explain why in some detail. In 1982 DG 17 divided the 1981 EEC deep mined coal production of 250 mt into 3 categories, (1) 50-60 mt which were fully competitive with imports, (2) 140-150 mt which verged on being uneconomic (judged by import prices), (3) 40 mt which were "fully uneconomic", and pressed for immediate closure.⁽¹³⁾ Then in a secret report of November 1984 they went further. Production costs of the 229 mt d/m output (1983) was matched against imported coal prices and 15% of EEC production was "hopelessly loss making ... whose closure is a question of time and social acceptability". A further 75 mt also required a subsidy which suggested closure within five years.⁽¹⁴⁾ With only 100-120 mt of production without subsidies, DG 17 recommended that half of EEC capacity be closed by 1990. They also divided the EEC coalfields on the basis of output per man shift, and those "whose productivity was below the Community average" which totalled 56,283,000 mt or 24.7% of 1983 production. These guidelines included all the UK peripheral areas including Scotland, the North East, the North West, South Wales and Kent.⁽¹⁵⁾ Financial and production criteria implied another 25% closures of up to 60 mt in Lorraine, Ruhr, Saar, Yorks and Notts. They demanded tighter investment criteria which recommended that investment "subsidies" would only be granted for the improvement of the economic viability of profitable or near profitable production capacity.⁽¹⁶⁾ This was meant to imply not just output increases *per se*, but the much tighter criteria of what was profitable as laid down by DG 17's assessment of competitive with import prices.

The other DG17 arguments were similar to those used by EdeF and the CEEB: (1) There was excess capacity in export coal mines, and numerous suppliers: (2) This variety of supply minimised exchange rate risks: (3) EEC production costs would continue to rise, while likely import price rises would be contained to 2% per year, in real terms: (4) Costs of subsidy were high, and they had various secondary effects: (5) The "gigantic" expenditure on coal subsidies impeded the movement of factors of production from old processes to newer ones. Limited Government resources would be better employed in not subsidising coal and hindering such reallocation: and (6) They claimed that the social costs of closure would be temporary, and outweighed by the long-term commitment to coal production.⁽¹⁷⁾ This coal argument is crucial because the EEC has always defended nuclear power as cheaper than coal. If therefore half of indigenous coal was more expensive than imports it would also be more costly than nuclear. In any case the Commission continued to press ahead with its own nuclear fusion projects, and to encourage more nuclear p/s

construction.

DG 17 was wrong on all their basic premises. The international steam coal trade is not large, in 1983 it was 160 mt out of a world output of 4 billion tonnes.⁽¹⁸⁾ As with the CEEB, when it suited them, they paid little attention to the long-run supply curves which underlay producer prices and the other add-on freight costs. What DG 17 used were EEC import prices of steam and coking coal, both one year and spot at ARA. All the coal information for the early eighties explained why prices fell after 1981, in essence because MECs and producers were prepared to modify their payback assumptions on their export mine investments, which with other creative accounting techniques, allowed the companies to cover several years of losses, or what would have been losses on previous assumptions. DG 17 proposed to offer 100-120 mt to these importers which would have raised the EEC import level from 60 mt (1983) to 160-180 mt. Long before a shift of this magnitude took place prices would have started to reflect full relevant costs.⁽¹⁹⁾

In the case of "subsidies" it was pointed out that the bulk were costs of pension funds, closure costs, and interest payments, all costs of past extraction which would continue regardless, or of public policy over the funding of the industry.⁽²⁰⁾ DG 17 never made clear why investment should be regarded as a subsidy. Implementation would have shorn half a million mining jobs from the EEC, and some hundreds of thousands indirectly.⁽²¹⁾ Most of these miners lived in already depressed areas – Limburg, Nord pas de Calais, Lorraine, the Ruhr, Aachen and Scotland which had already been hard hit in the worst crisis since the war. DG 17 were taken to task on their assumptions as to monetary and income costs to Government of closures. The Rhineland-Westphalia Institute suggested that the Federal Government's borrowing requirement would rise by 20% if half their deep mines shut.⁽²²⁾ Perhaps the strangest omission in their report was the failure to comment on foreign exchange consequences. If the EEC had to buy 100-120 mt, which like oil are priced in dollars, then this would have an adverse effect on the terms of trade. To hold the exchange rate constant would require an equivalent increase in manufactured exports from the EEC. If prices rose as trade rose, where would the benefit be for the EEC coal importing nations? The DG 17 took no account of the productivity changes wrought in the eighties by the NCB/BC computerisation programme or similar efforts in Germany, nor of the fractured market for coal buying. The EEC mining industry supported a mining equipment sector which bought equipment worth over \$2.15 bn in 1983. The export trade reached \$3 bn in that year. Their main competitor was the USA with a domestic mining industry and a market of over 800 million tonnes. Why jeopardise this linked EEC industry?

Of the four EEC deep-mine coal industries only Germany was prepared to reject the arguments for imports. German thinking was not just

that an economy benefitted from the contribution of all available resources and that care had to be taken to evaluate industrial linkages and multiplier effects of closures. It also invoked the relationship of their society to its economic activity, and the duties that ownership of enterprises entail towards society. German opposition forced the EEC to withdraw its proposals, which took a further dent after Chernobyl and the growth in scepticism in Germany about nuclear p/s costs.

The argument against coal imports was easier because of the huge volume of market and cost information which is readily available. Dealing with the other part of the EEC agenda was problematic because the availability of financial information on nuclear power was restricted to a few electricity utilities and Governments who favoured more nuclear investment. DG 17 simply echoed the utilities' assurances that nuclear power would produce cheaper electricity than coal. As the main EEC institution supporting nuclear power their analysis of indigenous coal costs and the arguments they (& EdeF and the SSEB) use against EEC coal and for imports are a crucial part of the economic case for nuclear power. As we noted above, if EEC coal closes, then the rise in coal import prices would make the case for nuclear power stronger. But the case made by DG 17 weakened in the eighties with the increase of information about nuclear costs, which the privatisation of the UK industry exemplifies. The SSEB is a case in point.

Planning Mistakes by the SSEB

Electricity consumption in the SSEB area rapidly increased after nationalisation.⁽²³⁾ This led to the construction of Longannet and Cogenzie which provided 3,600 MW of state of the art large p/s with dedicated coal mines specially developed for the p/s market using the latest coal technology, in the mine, in blending, control rooms and p/s. The figures for overall output excluding SSEB p/s rose fast from 1968 to 1974 from 11,893 GWh to 20,193 GWh, largely because of Longannet and Cogenzie, and the SSEB changed from a net importer of 882 GWh from the North Board in 1968 to a net exporter of 2127 GWh to the North by 1972. These were two linked showpieces for Scottish industry. But instead of building on these and Scottish construction expertise to support an export drive, it was all thrown away in favour of two dead-end and expensive projects, Inverkip and Hunterston B, the latter with no export potential at all, and which looks set to plumb new depths of loss in the future.

By the end of the fifties imported oil was delivered to p/s at usually below the cost of UK coal, though the price difference was not so great as to raise questionmarks about increased dependence on the MECs. By the mid-sixties the SSEB pushed through agreement on the 1980 MW Inverkip p/s based on the arguments that coal was (a) potentially unreliable, (b) oil

was cheaper, and (c) that demand would continue to rise. In fact the unreliability was not present in the coal industry until the Tory Government after 1970 decided to try and make it a (very) low wage industry.⁽²⁴⁾ Though the comparisons of fuel costs between coal and MEC oil were made prior to the cost reductions built into the new Longannet complex the advantage was not so robust as claimed. In 1965 and 1966 the price of oil exceeded or matched NCB delivered coal in Scotland (including transport) and did so again in 1969. The price difference per therm in 1967 and 1968 was 14% and from 1970 to 1972, three years of oil advantage, 10.5%, but over the whole period 1965 to 1973 only 6.4%. Was this really such an advantage on which to base import dependence in a commodity?

With the autumn of 1973 the case for oil p/s vanished. As Table 4 shows the oil price rise meant that in every single year from 1974 to 1982 oil cost more per GJ than NCB coal, the differential ranging from 22% in 1974 to 38% in 1982. On these figures there was no financial case for burning large volumes of oil in any year from 1974 to 1982 but as Table 4 shows the SSEB continued to spend heavily on oil.⁽²⁵⁾ Figures after 1983 were distorted by the clash with the miners, though they show an even greater gap before 1986.

Table 4: Cost of Oil and Coal to SSEB, 1973-1988

	Fuel Consumption		Cost per GJ in pence		Price of Oil above Coal by (%)
	Coal	Oil	Oil	Coal	
1973	6,358,640	1,181,114	25.489	28.687	-11.15
1974	6,987,459	918,419	34.579	28.114	22.99
1975	7,010,962	963,273	73.019	45.377	60.09
1976	8,158,733	402,954	89.998	61.911	45.37
1977	7,832,625	334,283	109.023	72.727	49.91
1978	7,728,620	507,628	115.046	84.990	35.36
1979	7,592,889	981,170	113.824	95.135	19.64
1980	8,002,763	458,164	129.488	117.729	9.99
1981	7,307,022	178,376	192.437	143.936	33.70
1982	7,550,856	152,070	217.415	157.094	38.40
1983	4,649,238	85,494	260.022	169.851	53.09
1984	4,463,010	76,012	283.448	173.499	63.37
1985	2,392,081	1,658,222	369.183	156.791	135.46
1986	6,252,908	64,120	535.513	187.363	185.82
1987	4,503,089	365,424	134.197	175.068	-23.35
1988	5,538,186	84,367	144.081	180.766	-20.29

Source: SSEB Report and Accounts, 1973-1988.

Note that 1 tonne of Scots coal was rated around 22,440 kJ/kg, and 1 tonne of oil was rated at about 42,934 kJ/kg.

If the cost argument for oil was weak before 1973 so was the SSEB forecasting basis for Inverkip. The Scottish economy was in crisis long before 1973. Emigration was higher from Scotland in the sixties than any other European region for which figures exist except Malta, and industrial demand stagnated from 1969 to 1974.⁽²⁶⁾ In these six years total non-domestic sales of electricity rose from 8028 GWh to only 8773 GWh. This left the domestic sector, but here demand had grown by only 1678 GWh from 1969 to 1974. Overall growth was 2423 GWh or 16% in the six years. And the rate of growth had slowed down in the sixties, from 9.6% in 1965/66 to 7.5% in 1968/89 and to only 6.7% over four years from 1971 to 1974, a rate of 1½% per year. The domestic sales problem was stark with fierce competition from gas in cooking and heating systems, and potential saturation in the standing electric appliances which use most power, namely washing machines and refrigerators. The utility demonstrated in 1979/80 that average savings of 22% per house (with a range of 15-45%) could be achieved with insulation and white meters.⁽²⁷⁾ With many closures in shipyards, mines and engineering plant, industry could not provide a sanguine outlook either. As the figures for the mid-seventies emerged it must have been clear, even to the SSEB chairman, that SSEB demand was stagnant, and that the crises of 1972 and 1974 – blamed at the time – could not be attributed to something structural. Yet in 1974 the SSEB claimed that demand would be “four times as great at the end of the seventies as it was at the start of the sixties”, and that it would continue to increase at a similar proportionate rate thereafter. Demand would be 30,000 GWh by 1981. As we have seen the Board’s own figures did not support such a prediction.

From 1973 to 1979 electricity use in the SSEB area rose only 7.5% to 18,524 GWh. It fell to a low of 17,397 GWh in 1983 and only managed to overtake the 1979 figure in 1986 and 1987, in part by sales of off-peak and white meter heating, at times when Scots least need it⁽²⁸⁾, and by a rise in commercial sales from 3776 GWh in 1979 to 4295 GWh in 1987. Electricity sent out from p/s increased from 19,944 GWh in 1973 to 24,878 GWh in 1979, or by 24.7%, mainly due to sales to the North Board for the Invergordon smelter. But 1979 also saw the maximum sent-out figure, and it fell as low as 19,338 GWh in 1983 after the closure of the smelter. By comparison with EEC demand this is not impressive. Moreover, domestic sales did not exceed the 1979 figure before 1988, and industrial sales stagnated in the eighties. The domestic base was 1,445,532 in 1979 which took 8009 GWh or 5540 units each, and though the total rose to 1,538,015 in 1987, sales were only 7725 GWh and down to 5022 each. The mistakes over Inverkip and Hunterston B were compounded by the decision to build Torness. Altogether, I would contend, they have reduced the SSEB from a financially viable nationalised company, to a lame duck with an appalling public image which has to be bailed out by financial and asset reorganisation prior to privatisation.

It can be argued that since 1926 there has been opposition from the Scottish establishment to mineworkers and coal. With the growth of the UK nuclear power industry, and the MECs foreign oil interests, there were alternatives which were eagerly grasped. From the early sixties, parallel with the spurious forecasting and the shaky cost claims, SSEB chairmen laid claim to the need for these wider energy sources. In 1974 after the oil crisis, for example, the chairman inveighed on the need for "diversity of primary fuels for electricity generation" crucial for reducing dependence on coal which he claimed was high cost, and insecure in supply. The SSEB target after the defeat of the Tory party, was that both "security and economy would be improved" by more nuclear plant and by gas and oil options when available. They have not deviated from their policy since.

The discussion in Scotland has been conducted in the same narrowly conceived terms as in the DG 17 papers and by the CEGB and EdeF, and in particular the assurances on nuclear costs have not been questioned inside the policy process. Nor have we seen the detailed public justification for policy that there is in Germany, mainly because we have no equivalent to the powers of the German Lander, and the NCB is now outside the decision-making process, in contrast to the German companies. So the SSEB and the nuclear industry and their associates in Government sit isolated from criticism as advocate and jury in their own interest.

Lack of Justification for Torness

If the SSEB was to justify itself as a nuclear utility with the completion of Hunterston B and Inverkip it would be expected to prove several things. (1) *That demand would grow.* Yet as we have seen demand was stagnant, and the prospects for the economy bleak. New capacity was not required for system maximum demand either; in 1979/80 this was 5861 MW, yet capacity was 10,227 MW or 74.5% above need. In January 1982 the smelter shut. Sales to England were an average of 592 GWh for each year 1978-81, and not encouraged by the disputes between the SSEB and the CEGB over the merits of the PWR and the AGR.⁽²⁹⁾ (2) *That the AGR was as efficient as a coal station or more so.* For the three years 1977 to 1979 the performance of the Hunterston B AGR unit one was poor, with a load factor of 31.2%, 39.6% and 41.3%, or an average of 37.4%. The second unit was shut down from October 1977 to February 1980 when it was flooded with sea-water. By 1988 the cumulative lifetime load factor of Hunterston B1 reactor was only 53.8%, and for the B2 reactor it was 53.5%. Though this is the top end of British AGR performance, as a technology it compares adversely with most other nuclear systems. The Japanese, Canadians, Finns, and Swiss, for example, have had consistently better lifetime load factors.⁽³⁰⁾ (3) *That Torness would produce cheaper electricity than either Longannet or Cogenzie when all relevant costs were included.* But Torness is an AGR and optimism on future efficiency is only assertion. As we explain below, the full costs are likely to be far higher than

an equivalent thermal station. And (4) *That NCB deep mine coal was high cost and would remain so whatever the NCB did.* This would be with reference to (a) coal imports, (b) opencast and private, (c) to nuclear power (q.v.), and (d) to gas and oil options. This implied that the arguments used by DG17 would also be used, and indeed the SSEB tried to prove this point by importing coal in 1981/82, and again in 1987 and 1988.⁽³¹⁾ Yet BC costs and productivity have dramatically improved in recent years, and much production is now well under import prices.

But the SSEB did not need to prove anything because the decision-making process already favoured their position. To emphasise the point part of the cabinet sub-committee minutes endorsing the nuclear programme were given to the press in November 1979. Then in February 1981 the Tory Government added four reasons for a 15,000 MW nuclear programme: (a) that nuclear plants would generate base load electricity at costs significantly below those of present or future thermal stations; (b) fossil fuel supply would diminish; (c) many p/s had to be refurbished by 2000; and (d) a commitment was necessary to build up a viable British nuclear p/s industry capable of supplying domestic needs, and of seizing export opportunities. The political war on coal initiated at this time has been well documented in every respect from accounts, finances, NCB Board composition, to the tasks for the police and security services.

Each one of the reasons for this AGR, and its brother at Heysham, were painstakingly analysed and rejected by the House of Commons Energy Committee in 1980 and 1981. The Committee criticised the forecasts about demand, the increases in planning margins, the wilful neglect of the depression and stagnant power use, of competition from gas, as well as market saturation and conservation. They noted that the Secretary of State for Energy had used historic cost figures for nuclear and coal capacity, but had admitted these were not valid comparisons. The Department was criticised for producing misleading figures and their habitual secrecy. The rise in the cost of new AGRs by 25% in real terms in the year to April 1980 was noted, as were the increases of 90% in real terms in reprocessing estimates in the previous five years. The export potential was ridiculed. An expert demolition of the case for Torness was made by former Conservative MP Michael Ancram. He went through the main financial and engineering criticisms of Torness much as an investment analyst would do, and added that it was not clear there would be any net gain in jobs, as most of the orders would go outside Scotland, and the coal mining industry would lose heavily once Torness was on stream. He also criticised the lack of effective supervision of the SSEB by the Scottish Office.

Importance of Relevant Accounting Systems

The Committee report mentioned accounting issues crucial to the

argument for and against nuclear power. A p/s system would normally include a flow of income which is put aside as depreciation for replacement, so much per year over the life of the p/s. But with rapid inflation a system which uses the historic cost of a p/s will generate insufficient funds for replacement. Therefore the utility will have to borrow or issue shares. For the building programme of the SSEB the rate of capital expansion for most of the seventies could not be covered by past earnings. In the early seventies the internal financing ratio was under 40%, it rose above 100% in only three years before 1981, and fell back below 40% after 1984 because of Torness. Moreover, the SSEB continued to use historic cost accounting (HCA), plus supplementary depreciation, for replacement, which meant that asset values were understated, therefore making the earnings ratio more attractive. But this supplementary depreciation was recognised in the seventies as entirely insufficient for replacement and for all costs arising out of the nuclear plant, including reprocessing and decommissioning.⁽³²⁾

We can explore this further by reference to Table 5, which shows the accounts presented to the world as HCA, and Table 6, as required by the City, the CCA standard. These indicate a number of serious contradictions. The drastic price increases in the early eighties gave the utility a sharp increase in profit, which grew faster than total income. With additional depreciation at a notional value and falling in real terms over the decade 1978 to 1987, operating profit (HCA) grew in real terms, with surprising speed after 1985. But it grew in step with interest payments, the growing burden of building Torness. So the bottom line surplus was low, never exceeding £23m. On the CCA calculation the position was far worse. Though the CCA operating adjustments did not grow in line with inflation (they fell in real terms 1979 to 1987) when added to interest payments it shows a loss, with a modest increase in real terms from 1978/79. Thus changes in the CCA operating adjustments, or increases in prices could push these figures into huge profits, or huge losses. The return on CCA assets, a main indicator used by the City, was under 2 and 3%.

The problem shown by the accounts do not stop there. If the SSEB had ceased building after Longannet and Cogenzie they would require to replace part of this plant from the late 1990's, and costs would include demolition and returning the site to green status. This would be easily containable, and in any case the p/s have much recyclable material.

The three nuclear plants represent an entirely different problem. (1) *They are much more expensive*, with a capital cost of 50% to 100% more for each MW of power, and the real cost is higher because of the longer construction time, and the delays in commissioning, which add to the financial burden. (2) *The operating costs*. During 1989 much information was leaked by the CEGB as to the real costs of day-to-day operations in their nuclear stations. It became clear by 1982 when the Invergordon smelter shut that Hunterston B could not supply electricity as cheaply as the

Table 5: SSEB Accounts on the Historical Cost Basis

(000' £)	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88
Total income	463,410	519,375	625,437	716,500	754,928	782,456	806,350	887,458	905,891	924,956
Profit & loss trading acct										
after depreciation	87,486	83,286	108,097	126,987	171,807	197,900	174,869	270,659	284,637	302,913
Contract & appliance	-244	203	-1,405	-1,594	-922	-400	430	698	1,180	2,236
Total	87,242	83,489	106,692	125,393	170,885	197,500	175,299	271,357	285,817	302,913
Additional depreciation	17,704	17,772	18,729	20,453	23,744	26,464	18,523	21,825	22,232	
Operating Profit	69,538	65,715	87,963	104,941	134,177	171,036	156,776	249,532	263,585	
Interest	60,006	65,618	71,432	87,709	113,820	154,924	187,293	227,739	240,492	290,222
Surplus/Loss	9,532	99	16,531	17,231	20,357	16,112	-30,517	21,793	23,093	12,691
					12,964 ¹				-82,104	-69,413 ²

¹ notional interest on long run revenue provisions.

² These were the extra costs involved in payments to British Nuclear Fuels, note that this figure was kept down by the removal of additional depreciation from the accounts.

Source: South of Scotland Electricity Board, Report and Accounts, 1979/80-1988/89.

Table 6: SSEB Accounts on the Current Cost Basis

(000' £)	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88
Total income	463	519	625	717	755	782	806	887	906	925
HC Profit on ord activity before interest	87	84	107	126	171	197	175	271	290	303
(Less) Current cost operating adjustments	-72	-100	-82	-89	-86	-94	-129	-112	-119	-128
CCOp Profit	15	-16	25	37	85	103	46	159	171	175
Interest	60	66	71	88	127	155	187	228	258	290
Current cost loss (-) after interest	-45	-82	-46	-51	-42	-52	-141	-69	-87	-115
										-62
										-177

Source: South of Scotland Electricity Board, Report and Accounts, 1979/80-1987/88.

twenty year old NCB/Alcan agreement for the smelter in the North East. In the case of the English AGRs the operating costs are in line with those which have emerged in the eighties from the United States which indicate that half way through the life of a nuclear plant operating costs rise above those of coal. (3) *British Nuclear Fuels plc related costs*. BNFL is a public limited company whose principal shareholder is the Department of Energy. It manufactures, reprocesses and stores nuclear materials, and since formation in 1971 the great bulk of its business has been on a cost plus basis under which BNFL passes on all its costs and liability for future costs to the SSEB and the CEBG. The SSEB and CEBG have signed a full cost plus contract with BNFL to run for a decade from the opening of a new thermal oxide reprocessing plant (Thorp). In 1977 the plant cost was given as £300m, in 1988 it reached £1,480m. Some of the basic engineering problems are unsolved, and the throughput is expected to be lower than expected, and thus unit charges higher. Other BNFL expenditure involves £2.1 bn by 1995. Most aspects of BNFLs work have been subject to real price rises, for example in 1987-88 unit charges rose by 129% for AGR fuel fabrication, 20% for Magnox fuel and 27% for Magnox reprocessing.⁽³³⁾ The cost plus nature of this reprocessing contract mean that CCA accounting cannot give an accurate view of future costs.

This would be bad enough, but CEBG documents leaked in May 1989 indicate that the situation is much worse. BNFL manufactures uranium fuel rods for Magnox and AGRs. After use the highly radioactive spent fuel is removed and sent to Sellafield for eventual reprocessing or storage. At present only part of the Magnox fuel is reprocessed, and the AGR fuel awaits completion of Thorp. Before reprocessing the spent fuel is stored in five huge ponds. Against all the estimates of the engineers, the AGR and Magnox fuel elements are corroding, seeping radioactivity into the pond water. In 1986 the Atomic Energy Authority began testing some of the Hunterston B fuel elements stored at Sellafield. One had a major failure after just 114 days in the reactor pond, and 3½ years at Sellafield, three other elements were releasing radioactivity after 130 days in the Hunterston pond and one year at Sellafield. One pin was so corroded it broke when dropped from a height of one metre. Most of the 6000 AGR elements in Sellafield No.4 pond were releasing radioactivity. The more corroded the elements the more work will have to be done manually, and therefore the more costly the process will be.⁽³⁴⁾ The CEBG papers confirm what the House of Commons Energy Committee suspected, that reprocessing will escalate in price, and therefore the provisions in the SSEB accounts are quite inadequate. Moreover, Lord Marshall wrote to Peter Walker in February 1988 suggesting that by 1993 all the AGRs would have to be shut as space for storage will run out, and he and his staff admitted that Friends of the Earth had been right all along to insist on dry storage, and not bother with wet storage or Thorp.

But this is not all. (4) *Decommissioning of Nuclear Plant*. The UK

Government and the Scottish Office has steadfastly maintained that the utilities nuclear power would be privatised as well as the thermal. But the question of decommissioning costs has again shown that earlier cost assurances such as those given to the Commons Energy Committee in 1980 and 1981 are nonsense. On 20th July 1989 the *Financial Times Power in Europe* reported that the latest electricity industry estimates put the charge from the BNFL for decommissioning the Berkeley Magnox at £487 m to £641 m depending on the timescale involved, with £200 m in the first stage. Yet this Magnox is only 5% of total Magnox capacity and BNFL charge on a cubic foot basis. *Power in Europe* suggested £3.5 bn as a possible final bill, and the same day the Labour Energy spokesman, Tony Blair, claimed that costs could reach £4.5 bn for the eight Magnox reactors of the utilities. On 25 July 1989 Cecil Parkinson, in one of his last acts as Energy Secretary, announced that the Magnox reactors would be retained in the public sector, thereby overturning what the Tories had been stating on privatisation of the nuclear power plant.⁽³⁵⁾ He also went so far as to admit the utilities had not made proper provision for decommissioning. Then on the 29 July the Department of Energy admitted the total cost of decommissioning of all the Magnox reactors, not just the SSEB and CEGB plant, could reach £15 bn, to be paid for by taxpayers. When we put these financial points together, we can see why several stockbrokers in the summer of 1989 were demanding the removal of all nuclear plant from privatisation and suggesting that retention would involve a negative asset valuation.

The nuclear industry in the UK has never been publicly accountable. It has its own secret police, and until recently was given a blank cheque to construct whatever plant it thought fit. The full costs of nuclear p/s, building, operating costs, interest charges, reprocessing, storage, transport costs, and decommissioning are now agreed by the same Department of Energy who denied it for so long to be above costs for coal, gas and oil p/s electricity. The cost escalations ferreted out in 1988 and 1989 by the House of Commons, by the Science Policy Research Unit, the *Financial Times* and the City, and leaked by the CEGB, have demolished the case for all past nuclear p/s and BNFL plants built in the UK. We thus follow the path of the USA where similar revelations have stopped civil nuclear work there. Up to now the UK and the Scottish establishment, academics, media, and politicians both Labour and Conservative have supported this programme. The few mavericks who opposed nuclear power were outside the policy process and ignored. As all this happened under public ownership it must raise questions about the form of democratic controls of nationalised industries and why we had to wait for privatisation to have sight of the real story.

Conclusion

The argument between EEC coal and nuclear power is one of the major economic clashes of the post-war era. It has already destroyed much

of the coal industry and done serious damage to coal-related industries and regions. The economic case for nuclear power has been based on the flimsiest of cost assessments, and though these look weaker as each month passes, the institutional support for the nuclear industry will continue to protect it.

The main EEC wide protection for nuclear power in the nineties will come from DG17. We should be quite clear about their role. While they continue to attack German and other coal support their concern does not extend to nuclear subsidies. Indeed, DG 17 have specifically endorsed the proposals put to them by the Department of Energy on UK privatisation, whereby the nuclear industry would be a protected supplier to the Area Boards, and able to charge higher prices. They continue to support the subsidies to the EEC fusion project, despite mounting evidence of its multiple failings. In 1988 and 1989 DG 17 pressed for closure of another 80-100 mt of EEC coal.

In Scotland the SSEB and the rest of the nuclear industry had absorbed huge numbers of technicians and scientists and public funds and used them for various obsolete technologies, including the AGR system, and the Dounreay fast breeder. If the energies of these scientists had been directed to other industries, including coal, then the Scottish economy might have weathered the last twenty years in better shape. As for coal the strides in new coal related technology, in chemicals, mining equipment, computer systems, environmentally clean power stations, will ensure that coal has a bright future. But they are being developed outside Scotland. Thus the coal-nuclear confrontation has ensured that another part of the supply side of the Scottish economy has virtually disappeared.

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References

1. I wish to thank Gerard McCloskey, Andrew Holmes and Chris Cragg of the Financial Times, Business Information Ltd for their considerable assistance over the past few years. I also wish to thank Martin Ince, Paul Auerbach, George Kerevan, John Foster, Dave Feickert, Eric Clarke, A Falconer, MEP, Dr Suzanne Najam, Debra Percival, and also the Secretary of the NSHEB Consultative Council, Perth and the Librarian, Law Library, Dundee University.
2. 'EEC' means the EEC 9, excluding Spain, Portugal and Greece, and all figures have been adjusted accordingly. The figures for electricity output come from the EEC Eurostat publications, Electricity Energy (monthly), the Energy Statistics Yearbook, and the Coal Production (monthly). The figures are given by Eurostat as gross electricity production within p/s, electricity available for use ex p/s, but before deductions for transmission and distribution and other losses, and electricity consumed. The figures used here are usually from the

- second category, available for use (AFU). In 1986 the EEC 10 AFU = 1,372,814 GWh, but total production was 7% higher, and actual use 6.5% below the AFU level. It should be noted that EEC figures are often at variance with those produced by national Governments and utilities, even though EEC figures are based on the former.
3. CEEB, Report and Accounts, 1987/88; Electricity Council, Report and Accounts, 1987/88 and series. These figures are before deductions for transmission and distribution losses.
 4. The CEEB inflated capacity needed to cover breakdowns from 17% excess in 1968 to 20% in 1977, and then to 28% in 1980. This had the effect of converting some of their huge excess capacity, erroneously constructed in their forecasts, into a required fail-safe for the system. This gave a new twist to creative accounting, which assumed that it was possible for 28% of plant to break down at the same time, House of Commons Energy Committee, HC 114 1-4. The Electricity Council's Medium Term Development Plans are discussed in Martin Ince, *Energy Policy*, Junction Books, London, 1982.
 5. EEC Com (88) 174 final Vol 2, part 1 and part 2. As part 2 relies on submissions from member states it is an unreliable guide to member practices. Friends of the Earth (Scotland) have details of energy conservation technology as does Andrew Warren at the Association of Energy Conservation.
 6. For example the thermal efficiency at SSEB conventional steam stations improved, with ups and downs, from 31.93% in 1973 to 32.97% in 1977 to 33.71% in 1987. These are explained by the phase out of older plant and new boilers in existing plant. In general a new version of anything will tend to be more efficient, and to use heat more effectively.
 7. British Coal Corporation, Report and Accounts, 1986/87. Mike Prior & Gerard McCloskey, *Coal on the Market, Can British Coal Survive Privatisation?* Financial Times, Business Information Ltd, London, 1988, p.65 and Table 8.1 p.84. For a review of the situation of the Scottish Steel industry see, J Louve & J Stevens, 'The Scottish Steel Industry', *Scottish Government Yearbook 1989*. The British Steel Corporation in the late 1970s pressed for increases in coking coal imports, which reached 7,149,000 tonnes in 1985.
 8. Organisation Internationale des Mineurs, submission to the European Parliament, Energy Research and Technology Committee. 1 & 2 December 1987, paper presented by Arthur Scargill, President. p.9 Table 2. For figures see Table 1 above.
 9. *Financial Times International Coal Report* (ICR) 5 June 1987, no 174. FT, *European Energy Report* (EER) 229, 15 May 1987, EER 277 14 Nov 1986. 1983 report from Groupe Long Terme Energie, the 1987 report Les Perspectives Energetiques de la France a L'Horizon 2000.
 10. Suzanne Najam, 'The Crisis in the Scottish Coal Industry', *Scottish Government Yearbook 1989*.
 11. David Cooper & Trevor Hopper (eds) 'Debating Coal Closures, Economic Calculation in the coal dispute 1984-85', *Cambridge Studies in Management* 10, CUP, 1988, House of Commons, Energy Committee, HC 196-1 (1985-1986), and HC 165-1 (1985-1986); John Saville, 'An Open Conspiracy: Conservative Politics and the 1984/5 Miners Strike', *The Socialist Register*, 1986; G Kerevan and R Saville, *The Economic Case for Deep Mined Coal in Scotland*, Edinburgh, 1985.
 12. Geoffrey Kirk (ed) 'Schumacher on Energy' London, 1983 pp.83-85 on the EEC supported Robinson report of 1960, whose keynote was *laissez faire*, and which dismissed the balance of payments and other possible future problems. William Ashworth with Mark Pegg, 'The History of the British Coal Industry', Vol 5 *The Nationalised Industry*, Oxford, 1986, has some notes on EEC arguments.
 13. Details in COM (82) 31 final. Full details of this and other of the DG 17 proposals are given in George Kerevan, Richard Saville, with Debra Percival, 'The Case for Retaining an European Coal Industry: A critical response to the EEC Coal Directorate close and import plan as laid out in COM (85) 251 and COM (85) 525'. For discussion of European proposals and the KSP report, *New Statesman* 13 September 1985, *Scotsman*, 12 Aug and 3 Dec. 1985; EER 29 Nov 1985 *Guardian* 6 Dec 1985. The next four paragraphs draw on material in this report.
 14. DG 17 COM 85 251/3 para 41, and see KSP report.
 15. There were considerable differences in the tonnages involved from paper to paper for similar categories and regions and also differences in the basis of tonnages. DG 17 agreed that their approach was, "admittedly very schematic" (COM 85 251/3 para 79). Imprecision in assessment was not confined to coal, the EEC papers on steel which listed Ravenscraig as a probable closure in 1984, and some of the Agricultural papers were as vague.
 16. Report to the Energy Committee, Lambert Croux rapporteur, 10 December 1984, see KSP pp.20-22.
 17. Though this is a summary of the DG 17 text, the original adds little qualification.
 18. FT, ICR, Coal Year 1984 to 1988. For supply cost assessments see International Energy Agency, *The Cost and Availability of Columbian Coal* (1985) KSP ch. 2, CEEB Sizewell inquiry evidence, R Saville, *The Supply of Coal in W Desaeere* (ed) Sparr de Europese Mijnen, Brussels, 1986. The FT, ICR, in the eighties have catalogued the crises of the export mines, and the various techniques used to keep them afloat. South African mines, and possibly Polish mines, were the exceptions.
 19. House of Commons Energy Committee HC 196-1 1985/1986 pp. 351-357. This discusses the argument between BC and the CEEB of the impact on prices if the CEEB were to increase steam coal imports to 30mt.
 20. KSP p.34 s 6. Andrew Glyn, 'The Economic Cast against Pit Closures', published the first major criticism of the NCB accounts in 1984, reprinted in Cooper and Hopper (eds), *op cit*.
 21. This would depend on the local multipliers involved. This proposal came at a time when the EECs 1984/85 *Economic Report* estimated that a growth rate of 2.5% would be needed to start tackling unemployment levels, though this was the overall figure which was not sensitive to the regional concentrations of mining jobs. How one assesses unemployment and closure costs became a sensitive political subject in the eighties. Part of the result depends under which budget the displaced workers are placed, their age profile, the length of time on the dole, what jobs they eventually get, and at what wage.
 22. Rhineland-Westphalia Institute for Economic Research, Coal paper 1985.
 23. Stuart McDowall, ch. 13 in Richard Saville (ed), *The Economic Development of Modern Scotland 1950-1980*, Edinburgh, 1985.
 24. John Hughes & Roy Moore, *A Special Case? Social Justice and the Miners*, Penguin Special, 1972.
 25. Actual savings are conjectural and some oil burn was required in these years. New thermal p/s are usually cheaper and more efficient to run than older ones, though all three large thermal p/s were new. If the NCB had been more confident that the SSEB would not rush to buy oil at the first dip in price, then the intended exploitation of reserves in the Dollar and Monktonhall areas would have gone ahead. There was a flicker of this in the case of Polmaise, but it

died when it was clear that demand in the SSEB area was not rising, and that Torness was going to be base load. For the miners' view, John McCormack, *Polmaise: The Fight for a Pit*, Index Books, London, 1989.

26. T L Johnston, N K Buxton and D Mair, *Structure and Growth of the Scottish Economy*, London, 1971 pp.222-225.
27. *SSEB Report and Accounts*, 1979/80, p.9.
28. This is a point made by Martin Ince in *Energy Policy*, Junction Books, 1982. Off peak and White meter together gave sales of 2472.2 GWh in 1979 and 2788 GWh in 1987. White meter sales are aimed at gas, which is the preferred heating and cooking fuel for Scots.
29. This emerged at the Sizewell Inquiry, 1982.
30. House of Commons, Energy Committee, HC 114 1-4 first report, session 1980-81 p.121, and evidence. Michael Ancram the Conservative MP invited the Energy Committee to draw the conclusion from this record that no "responsible commercial concern could make an investment decision of (the magnitude of Torness) based on this past performance". Single year figures for AGRs are irrelevant for assessing AGR performance. For example, in 1988 Hunterston B1 had a load factor of 85.1% and B2 59.0%, but for the year to end May 1989 Hunterston B1 reached only 63.5%, B2 87.4%. *Power In Europe*, 3 August 1989, *Nucleonics Weekly*, 3 August 1989, *Nuclear Engineering International*, 1988, pp.20-21.
31. R Saville and G Kerevan, Coal Imports paper, STUC, February 1988, and FT ICR, no 190, 29 Jan 1988, no 191, 12 Feb 1988. The SSEB had been encouraged by the Monopolies and Mergers Commission, 'South of Scotland Electricity Board' Cmnd, 9865, Aug 1986, Ch.9.
32. *SSEB Report and Accounts* 1979/80, p.15.
33. House of Commons Energy Committee, session 1988-89. Third report. British Nuclear Fuels plc: Report and Accounts 1987-88, 5 April 1989.
34. The material was published in *Time Out*, the London listings magazine, no 979, 24-31 May 1989, and this summary does not do justice to the scale of the mess the nuclear industry is in as portrayed in the magazine. Publishing in *Time Out* had the desired effect of saturation coverage in the City, which is the only group of institutions who have the power to influence policy. With other leaked papers in the spring and summer of 1989 much of the desired effect was achieved.
35. *Hansard*, 25 July 1989.

BUILDING THE MERCHANT CITY: SOME LESSONS IN URBAN REGENERATION

Jack Brand

For the first sixty years of this century, Glasgow was a city on the way down.⁽¹⁾ By the 1970s, this was evident even in the city centre, with the west end of Sauchiehall Street: once a major centre of fashion: looking tatty and peppered with closed shops. Even worse was the historic centre running from the medieval High Street to Buchanan Street: the Merchant City.⁽²⁾

Since 1980 this central area has been returned to prosperity. This chapter will examine how this was done, not for the sake of the Glasgow story alone, but for the lessons we can learn for urban regeneration elsewhere.⁽³⁾ This is particularly appropriate now, when the Government has set up Urban Development Corporations (UDCs) to manage the regeneration of inner city areas in England and Wales.⁽⁴⁾ Parkinson points out that the philosophy of the UDCs is to remove the process of improvement from the local authorities, which are considered to be too political and inefficient, and to place it with an authority which has no local democratic responsibilities and is accountable only to the Government.⁽⁵⁾

In the rebuilding of the Merchant City, we shall show that Glasgow District Council was the essential first mover and the body which, even up to the present moment, has forced the pace of change. This is all the more remarkable when one considers that Glasgow has had a Labour-dominated council, with breaks totalling only eight years, since 1933.⁽⁶⁾ Even with this background, it has worked happily with developers and others in the private sector, and its cooperation with Scottish Development Agency (SDA) has brought outstanding results.

It is clear that several agencies cooperated in Glasgow as opposed to the strategy of concentrating decision making and implementation in an Urban Development Corporation. I shall argue that there were clear advantages in that the local authority was able to do things which the SDA, or a UDC, could not do. By the same token, the Agency worked as a catalyst in the relationship between the Council and the Developers under certain circumstances; not just by providing more money, but also by its attitudes and its record.

Finally, the events in Glasgow reveal something about the role of elected members in local government. It has been suggested that one